**Table 1** Effects on chick weight as a nestling (approximately 7 days post-hatching) from a linear mixed-model.

|  |  |  |  |
| --- | --- | --- | --- |
| Predictors | Estimates | CI | p |
| Intercept | 0.756 | 0.483 – 1.029 | **<0.001** |
| Mother Age | -0.003 | -0.025 – 0.020 | 0.799 |
| Mother Lifespan | 0.001 | -0.022 – 0.023 | 0.943 |
| Extra-pair Genetic Father Age | -0.008 | -0.031 – 0.015 | 0.511 |
| Extra-pair Genetic Father Lifespan | -0.012 | -0.034 – 0.011 | 0.307 |
| Cuckolded Social Father Age | 0.000 | -0.024 – 0.025 | 0.969 |
| Cuckolded Social Father Lifespan | -0.005 | -0.027 – 0.018 | 0.678 |
| Within-pair Father Age | 0.019 | -0.009 – 0.046 | 0.185 |
| Within-pair Father Lifespan | 0.003 | -0.023 – 0.028 | 0.826 |
| Mean Helper Age | 0.026 | -0.009 – 0.061 | 0.142 |
| Number of Helpers | 0.032 | -0.011 – 0.075 | 0.142 |
| Extra-Pair [yes] | 0.221 | 0.051 – 0.392 | 0.011 |
| Incubation Date | 0.315 | 0.181 – 0.449 | **<0.001** |
| Age at Weighing | 0.849 | 0.821 – 0.878 | **<0.001** |
| Pre-1992 | 0.411 | 0.080 – 0.743 | **0.017** |
| Clutch Size | -0.014 | -0.046 – 0.018 | 0.397 |

Note: Sample size is 4322 individual chicks. The model includes random effects of mother ID (n = 532, variance = 0.076), social father ID (n = 482, variance = 0.049), genetic father ID (n = 562, variance = 0.035), and cohort (n= 30, variance = 0.018). The residual variance is 0.450. Both chicks sired extra-pair and within-pair are included in the model. Interactions with dummy variables (0 or 1) are employed so that only extra-pair chicks contribute to estimates related to the extra-pair genetic fathers and cuckolded social fathers, while only within-pair chicks contribute to estimates related to within-pair fathers. This dummy variable method is also employed so that only chicks with helpers on the territory contribute to the estimate of mean helper age.

Survival

**Table 2.** Effects on chick survival to potential independence (four weeks post-fledging) from a generalized linear mixed-model (Bernoulli distribution, logit-link function).

|  |  |  |  |
| --- | --- | --- | --- |
| Predictors | Log-Odds | CI | p |
| Intercept | -2.017 | -2.559 – -1.475 | **<0.001** |
| Mother Age | -0.074 | -0.150 – 0.002 | 0.056 |
| Mother Lifespan | 0.103 | 0.026 – 0.179 | **0.009** |
| Extra-pair Genetic Father Age | -0.049 | -0.127 – 0.028 | 0.214 |
| Extra-pair Genetic Father Lifespan | 0.025 | -0.045 – 0.096 | 0.483 |
| Cuckolded Social Father Age | -0.025 | -0.106 – 0.057 | 0.552 |
| Cuckolded Social Father Lifespan | -0.033 | -0.110 – 0.043 | 0.392 |
| Within-pair Father Age | 0.094 | 0.001 – 0.187 | **0.047** |
| Within-pair Father Lifespan | -0.045 | -0.130 – 0.039 | 0.291 |
| Mean Helper Age | 0.133 | 0.013 – 0.252 | **0.030** |
| Number of Helpers | -0.068 | -0.213 – 0.078 | 0.364 |
| Extra-Pair [yes] | 0.249 | -0.309 – 0.807 | 0.382 |
| Incubation Date | 3.277 | 2.806 – 3.747 | **<0.001** |

Note: Sample size is 4548 individual chicks. The model includes random effects of mother ID (n = 538, variance = 0.853), social father ID (n = 491, variance = 0.753), genetic father ID (n = 570, variance = 0.143), and cohort (n= 30, variance = 0.095). The residual variance is 3.29. Both chicks sired extra-pair and within-pair are included in the model. Interactions with dummy variables (0 or 1) are employed so that only extra-pair chicks contribute to estimates related to the extra-pair genetic fathers and cuckolded social fathers, while only within-pair chicks contribute to estimates related to within-pair fathers. This dummy variable method is also employed so that only chicks with helpers on the territory contribute to the estimate of mean helper age.

Male Recruitment

**Table 3.** Effects on male recruitment probability (survival to the breeding season after their hatching) from a generalized linear mixed-model (Bernoulli distribution, logit-link function).

|  |  |  |  |
| --- | --- | --- | --- |
| Predictors | Log-Odds | CI | p |
| Intercept | -2.683 | -3.268 – -2.098 | **<0.001** |
| Mother Age | -0.095 | -0.182 – -0.008 | **0.032** |
| Mother Lifespan | 0.102 | 0.033 – 0.171 | **0.004** |
| Extra-pair Genetic Father Age | -0.028 | -0.125 – 0.068 | 0.565 |
| Extra-pair Genetic Father Lifespan | -0.015 | -0.100 – 0.070 | 0.725 |
| Cuckolded Social Father Age | -0.048 | -0.145 – 0.050 | 0.340 |
| Cuckolded Social Father Lifespan | -0.030 | -0.105 – 0.045 | 0.435 |
| Within-pair Father Age | 0.054 | -0.057 – 0.165 | 0.341 |
| Within-pair Father Lifespan | 0.029 | -0.064 – 0.121 | 0.543 |
| Mean Helper Age | 0.137 | 0.001 – 0.273 | **0.048** |
| Number of Helpers | -0.041 | -0.214 – 0.132 | 0.644 |
| Extra-Pair [yes] | 1.039 | 0.323 – 1.755 | **0.004** |
| Incubation Date | 1.821 | 1.207 – 2.436 | **<0.001** |

Note: Sample size is 2259 individual males. The model includes random effects of mother ID (n = 494, variance = 0.246), genetic father ID (n = 498, variance = 0.082), and cohort (n= 30, variance = 0.020). Social father ID was not included as a random effect as there was inadequate statistical power to estimate this term.The residual variance is 3.30. Both male chicks sired extra-pair and within-pair are included in the model. Interactions with dummy variables (0 or 1) are employed so that only extra-pair chicks contribute to estimates related to the extra-pair genetic fathers and cuckolded social fathers, while only within-pair chicks contribute to estimates related to within-pair fathers. This dummy variable method is also employed so that only chicks with helpers on the territory contribute to the estimate of mean helper age.